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ABSTRACT

Designed to disseminate information to the post-school sector of United Kingdom education, this directory provides information on 50 microcomputer software packages developed by the Microelectronics Education Program (MEP) and available through educational publishers. Subject areas represented include accountancy, biology, business education, chemistry, careers, design technology, economics, food studies, general studies, geography, health science, home economics, mathematics, numeracy, physics, sciences, social studies, technician courses, vocational preparation, and work experience. For each subject area, information provided includes titles, content descriptions, suitability for individual or group work, learning materials forming the package, source/publisher, and technical specifications for microcomputer hardware. (Author/LMM)

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An Occasional Paper

ED246855

Microcomputer materials from MEP

An annotated directory of packages of interest to further education

A directory based on information supplied by the **Council for Educational Technology** Consultant **Leslie Gilbert** in consultation with MEP staff

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Dear Sir/Madam

MICROCOMPUTER MATERIALS FROM MEP

Attached herewith is an annotated directory of MEP material that should be of interest to further education.

The data, which has been collated by Leslie Gilbert through the Council for Educational Technology, is designed to be of immediate value to FE teachers. It is in the form of information sheets over a range of subject headings taught in both school and colleges. Each sheet describes available titles, basic content and microcomputer equipment required. We would like to thank MEP staff and publishers for their help in this project.

More MEP material will obviously become available from 1984 and if the FE system finds this directory of some value we shall extend this exercise. Feedback from recipients will therefore be welcome.

This short publication is part of a growing portfolio of work by FEU in the IT area. For details of other work in progress please contact the FEU Information Officer.

Yours faithfully

Jack Mansell

JACK MANSELL
Chief Officer

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d) to disseminate and publish information and to assist in the dissemination and publication of information about recommendations for and experiments and developments in further education.

The publications in this series of Reports are intended to inform teachers and others and to stimulate professional discussion about matters of concern to the FE service. A limited number of extra copies of this report are available from:

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'MICROCOMPUTER MATERIALS FROM MEP: an annotated directory of packages of interest to further education.

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'MICROCOMPUTER MATERIALS FROM MEP': an annotated directory of packages of interest to further education.

SECTION I Introduction

1. In GUIDANCE NOTES 2 (1982), FEU advised colleges and LEA's of the potential source of information and materials created by the Microelectronics Education Programme (MEP). With the expansion of FEU work into computer literacy and Information Technology, it was appropriate to look at the materials already emerging from the MEP project, not only to prevent unnecessary duplication when we support further research projects, but also to inform the FE system of the work being done elsewhere.

2. This document therefore reviews some 50 packages currently available in the UK. The development of error-free and effective packages can be time consuming and lecturers may prefer to use packages that are already available, if their applications are suitable and if they are of good enough quality.

3. MEP is now collaborating with commercial publishers in the dissemination of packages originating from major computer assisted learning projects. Although most of the packages are intended in the first place for use in schools, some of them are likely in their content and approach to have an application in Further Education. Even if a package is judged not to be immediately applicable in its entirety, some portions might be useful either as they stand or with local modification, or the approach adopted might provide helpful ideas for the design of a new package.

As with, say, a text book, the educational suitability of a computer package can be fully assessed only by actual trial. The purpose of the descriptions given here is to enable a lecturer to make at least a preliminary judgement on suitability. In most cases it should be possible to arrange for inspection through the nearest MEP Regional Information Centre. These are listed in Section III (p37).

MEP Centres are likely to be able to report the experience of existing users, and may be able to name local users with whom personal contact could be made. The publishers also have detailed knowledge of their materials and are willing to give advice. If there is any uncertainty on technical points, such as machine requirements, which cannot be resolved locally, the publishers should be consulted.

4. We are aware that some of these materials are already being used in colleges. Further trials and proposals for modifications for FEU users might best be undertaken by local groups of lecturers. There is some experience of software development by this method and in one Regional Advisory Council (RAC) area an FEU sponsored project* is doing just this. The FEU would welcome offers from local groups to develop more detailed recommendations for course support materials arising from trials with these MEP packages - across vocational preparation, mainstream and post-experience courses. Lecturers with an interest in such work in vocational preparation should contact their nearest Regional Curriculum Base.** Those in mainstream FE should in the first instance contact Pat Noble at FEU; those with interest in adaptations and developments in post-experience/adult education should contact Philip Barnard, also at the FEU.

5. This is our first attempt to identify a collection of computer-based materials. Some selection has been inevitable and we are grateful to our Council for Educational Technology (CET) Consultant, Leslie Gilbert, for attempting this task. The aim has been to produce factual data sheets with some commentary on course-relevance. We have not attempted to relate detailed course levels to these materials as we recognise that many teachers would wish to decide for themselves just how and where they would use this material. We are happy to receive from lecturers their comments regarding the usefulness of this directory.

Section II Annotated Directory

6. The 50 or so programs that follow are grouped by curriculum areas and can be traced from the index (page 3). Some packages have potential in several courses and the index is provided to help find items. For each item the Directory provides a title, content description, use for group or individual learning, materials provided, source, price, publisher, date and technical "delivery system" needed.
Lecturers are welcome to copy entries of interest and are invited to consult their technical support services about college facilities available to them.

7. Addresses of the program publishers are given on page 37.

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* Staff development associated with teaching and learning applications of micro-computers in further education (RP56); completion date January 1984.

** Listed on page 40.

8.

INDEX	DATA SHEETS
Accountancy	E
Biology	A,B,C,D,M
Business education	E
Chemistry	F I
Careers Education	L,
Design Technology	G
Economics	H,I
Food Studies	D
General Studies	I,J,K,L,M
Geography	N
Health Science	B,K,
Home Economics	J,K,
Mathematics	C,O
Numeracy	J,K,M,O
Physics	P,Q,R,S,T,U
Science Foundation	J,I,
Social Studies	M
Technician courses	F, G, I, P,Q,R, S,T,U
Vocational Preparation	L,O
Work Experience preparation	L,

9. DIRECTORY ENTRIES

Subject: Biology

Titles:
1 Biology Pack 1
2 Biology Pack 2

Descriptions: Most of the programs are designed for students at GCE A level. Some are also suitable for students at O level. They make maximum use of graphics facilities. Date can usually be displayed in pictures, graphs or tables.

1 Biology Pack 1

Monohybrid
Mendel's tall and short peas; illustrating Mendel's first law and the 3:1 ratio. This program simulates a monohybrid cross (between two organisms heterozygous for a single character) generating batches of twelve offspring at a time.

Dihybrid
Mendel's yellow and green, round and wrinkled peas; illustrating Mendel's second law and the 9:3:3:1 ratio. This program simulates a dihybrid cross (between two organisms heterozygous for two characters, each character carried on a different chromosome) and exhibits independent assortment.

Chromosome (five programs)
These programs simulate all the crosses with Drosophila that a teacher might wish to use from O level to S level. Data are presented pictorially and are indistinguishable from that obtained from actual breeding experiments. Situations demonstrated include 3:1, 1:1, 9:3:3:1, 1:1:1:1 ratios as well as back crosses to illustrate linkage between two or three characters at once. Mapping of 11 characters on 3 different chromosomes is facilitated with the use of a series of 16 linked worksheets - each student need investigate only 2 characters at a time.

2 Biology Pack 2

Natural selection
Uses the Hardy-Weinberg equation to calculate the change in the proportion of different types of peppered moth as a result of atmospheric pollution in the nineteenth century. The model can be used to make predictions of effects on the moth population of the Clean Air Acts. The occurrence of the sickle cell also provides data suitable for this model.

Genetic drift
When a population is reduced to a small size and then recovers, a change in gene frequency can occur as a result of random processes. This program demonstrates the various points at which random processes can have their effect and illustrates the change in gene frequency which can occur as a result of chance rather than natural selection. An aid to simplify the teaching of this important concept.

Evolution
When populations become separated by geographical or other breeding barriers, changes in the gene frequencies of the population can occur independently of each other. This program demonstrates the effects of (1) migration (2) genetic drift (3) mutation and (4) selection on both large and small populations.

Type of use — Group or individual learning

Materials (each title) — Disk or cassette
Students' guide suggesting methods of use
Technical guide containing information on program design and structure, of value to those wishing to modify the programs.

Source — Warwick Science Simulations. Programs and text: John Hewitson

Price — £18.50 + VAT (each title)

Publishers — Longman Micro Software

Date — 1 1983 (second edition) 2 1983

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and / or cassette	D & C	D & C	D	D & C
Memory size	32K	16K	48K	32K
BASIC version	BASICNG 2	PET BASIC	APPLE SOFT	BBC BASIC
Operating System	CP/ M 1.4	-	DOS 3.2 or 3 3	OS 1.0 or later
High resolution	Yes	No	Yes	Yes
Colour	Yes	No	No	Yes

Subject	Biology
Titles	Physiological Simulation
Description	In this simulation of an active human, the user, representing the brain, has to keep its body (the computer) alive while performing a series of physical activities. Once the sex, age, vital capacity, obesity, and blood volume have been set, the brain can vary the rate of breathing, the breath volume, and the sweating rate while the human performs up to three activities (which can range from sleeping to cross-country running). Students can input their own personal details and hence make much more extensive use of data normally acquired during the standard human physiological practicals. The simulation reinforces the ideas of feedback between physiological concepts, and allows examination of the effect of altering a single variable in a complex system - a basic requirement of investigative science.
Type of use	Group or individual learning, using simulation.
Materials	Disk or cassette Teacher's booklet with instructions for running the program.
Source	Five Ways Software. Designer David Hawker.
Price	£12.50 + VAT
Publisher	Heinemann Computers in Education
Date	1982

Machines

Micro	RML 380Z	Apple II	BBC B
Disk and/ or cassette	D	D	D & C
Memory Size	32K	48K	32K
BASIC version	ALL	APPLESOFT	BBC BASIC
Operating system	COS 3.4 or later. (Note)	DOS 3.2 or 3.3	OS 1.0 or later
High resolution	Yes	No	Yes

Note Program disk includes CP/M

Subject	Biology
Titles	1 Predator-Prey Relationships 2 Pond Ecology 3 Transpiration 4 Countercurrent Systems 5 Statistics for Biologists 6 Multifactorial Inheritance
Descriptions	The programs provide an opportunity for the student to explore a situation that is not safe, too dangerous, too time-consuming or too complicated for work in the classroom. At the same time the interactive nature of the design encourages the student to be involved with enquiry-based learning. It enables the student to push back the frontiers of learning often restricted by the limited scope that a book can provide (in the form of pre-determined text and diagrams). The student can achieve unlimited displays of diagrams, graphs, tables and text as a result of his/her input into the program. 1 Predator-prey relationships A simple model of predator-prey relationships 2 Pond ecology A model ecosystem which allows the effect of fishing and pollution on numbers of phytoplankton, herbivores and fish to be investigated 3 Transpiration The effects of the environment on water loss from plants are modelled 4 Countercurrent systems Simple models of a heat exchanger and a countercurrent multiplier 5 Statistics for biologists To assist the statistical analysis of biological data 6 Multifactorial inheritance A model to investigate continual variation in a hypothetical organisation.
Type of use	Groups or individual learning, including models and simulations.
Materials (each title)	Disk or cassette Students' leaflets Teacher's booklet
Source	Computers in the Curriculum Project (first series)

Price £13.50 + VAT (each title)

Publisher Longman Micro Software

Date 1983 (second edition)

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and/ or cassette	D & C	D & C	D	D & C
Memory size	Note 1	32K	48K	32K
BASIC version	BASICSG 5.OH	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/M 1.4	SUPERSOFT	DOS 3.2	OS 1.0 or later
High resolution	Yes	Yes Note 2	Yes	Yes
Colour	Yes	No	No	Yes

Note 1 Titles 1, 2, 3 and 4 in 32K and 56K versions. Titles 5 and 6 in 56K version only

Note 2 Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable

Subject: Biology

Titles:

1 Limiting Factors in Photosynthesis
2 Flowering in Soya Bean
3 Biomass
4 Metabolic Pathways
5 Diet Analysis
6 Blood Sugar

Descriptions:

The programs provide an opportunity for the student to explore a situation that is not safe, too dangerous, too time-consuming or too complicated for work in the classroom. At the same time the interactive nature of the design encourages the student to be involved with enquiry-based learning. It enables the student to push back the frontiers of learning often restricted by the limited scope that a book can provide (in the form of pre-determined text and diagrams). The student can achieve unlimited displays of diagrams, graphs, tables and text as a result of his/her input into the program.

1 Limiting factors in photosynthesis
Demonstrates how the rate of photosynthesis may be limited by one or more factors and allows students to plan and carry out investigations using a wider range of parameters controlled with greater precision than is otherwise possible in a school laboratory

2 Flowering in soya bean
Provides a study of the factors affecting flower initiation and the control of flowering by endogenous rhythms by allowing students to plan and carry out series of experiments under controlled conditions

3 Biomass
Models a freshwater reservoir which can be stocked with trout from fry to adults and allows students to 'observe' the population over many years with or without interference by man. Assists in the understanding of the production of biomass by a secondary producer and demonstrates how man can affect the yield and maximise the return for a given resource

4 Metabolic pathways
Simulates the experimental determination of a metabolic pathway through growth experiments with various mutant strains of the bacterium Salmonella typhi murium

5 Diet analysis
A breakdown of the calorie, protein, fat, carbohydrate, vitamin and mineral content in meals selected by the student

6 Blood sugar
A model to demonstrate the relationships between the various factors affecting the level of glucose in the blood of a human to illustrate the principles of homeostasis.

Type of use — Group or individual learning, including models and simulations.

Materials (each title) — Disk or cassette
Students' leaflets
Teacher's booklet

Source — Computers in the Curriculum Project (second series)

Price — £13.50 + VAT (each title)

Publisher — Longman Micro Software

Date — 1983

Machines

Micro	RML 3303	PET	APPLE II	BBC B
Disk and/ or cassette	D & C	D & C	D	D & C
Memory size	56K	32K	48K	32K
BASIC version	BASICSG 5.OH	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/M 1.4	SUPERSOFT	DOS 3.2	OS 1.0 or later
High resolution	Yes	Yes Note 1	Yes	Yes
Colour	Yes	No	No	Yes

Note 1 — Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable.

Note 2 — Title 5 not available on Apple

E

Subject	Business Studies
Titles	1 Accounts I 2 Accounts II
Descriptions	The programs are designed to reinforce and clarify the procedures involved in keeping accounts. 1 Accounts I The double entry system is emphasized throughout. The program is in two parts. In Part One the user is asked to post items into a monthly cash account, total this account, post the other accounts used, and complete the trial balance. Part Two covers the monthly gross profit page and calculation of the gross profit. The monthly balance sheet must also be completed. At the end of each month's accounting a score, based on the user's responses, is given. 2 Accounts II This simulation, in which the user assumes the role of a small wholesaler, emphasizes the importance of book-keeping, particularly in controlling the movement of stock, as an essential part of business management. The decisions which have to be taken are typical of those encountered in a small business - in this case stocking and selling television sets. Original capital and assets are fixed, but users are in charge of all further decisions taken over the six-month accounting period. These include when and in what quantities to order stock, the selling prices, delivery dates, etc.
Type of use	1 Classroom demonstration or individual practice. 2 Classroom demonstration, individual practice, or a team activity in which each group tries to make a profit.
Materials (each title)	Disk Teacher's booklet with instructions for running the program
Source	Five Ways Software. Designer Betty Liney.
Price	£12.50 + VAT (each title)
Publisher	Heinemann Computers in Education
Date	1982

E

Machines

Micro	RML 380Z	Apple II
Disk and/or cassette	D	D
Memory size	32K	48K
BASIC version	ALL	APPLESOFT
Operating system	COS 3.4 or Xacer (Note)	DOS 3.2 or 3.3
High resolution	No	No

Note Program disk includes CP/M

F

Subject: Chemistry

Titles:

1 Rates of Reaction
2 Manufacture of Sulphuric Acid
3 Homogeneous Equilibrium
4 Gas Chromatography
5 Chemical Element Game

Description: The programs provide an opportunity for the student to explore a situation that is not safe, too dangerous, too time-consuming or too complicated for work in the classroom. At the same time the interactive nature of the design encourages the student to be involved with enquiry-based learning. It enables the student to push back the frontiers of learning often restricted by the limited scope that a book can provide (in the form of pre-determined text and diagrams). The student can achieve unlimited displays of diagrams, graphs, tables and text as a result of his/her input into the program.

1 Rates of reaction
The effect of reaction conditions, including particle size of catalyst, on the rate of decomposition of hydrogen peroxide.

2 Manufacture of sulphuric acid
The conflicting demands of best equilibrium yield, high daily production and profitable manufacture.

3 Homogeneous equilibrium
An investigation of acid-alcohol equilibrium and some gas phase equilibria leading to an equilibrium law in terms of concentration.

4 Gas chromatography
A simulation of the separation of some organic compounds to show the application to qualitative and quantitative analysis.

5 Chemical element game
A competitive game intended to review the properties of some elements and their compounds. Identify the mystery element.

Type of use: Group or individual learning, including models, simulations and a game.

Materials (each title)	Disk or cassette Students' leaflets Teacher's booklet
Source	Computers in the Curriculum Project (first series)
Price	£13.50 + VAT (each title)
Publisher	Longman Micro Software
Date	1983 (second edition)

Machines

Micro	RML 380Z	PET (Note 4)	APPLE II	BBC B
Disk and/ or cassette	D & C	D & C	D	D & C
Memory size	(Note 1)	32K	48K	32K
BASIC version	BASICSG 5.0H	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	SUPERSOFT	(Note 2)	OS 1.0 or later
High resolution	Yes	Yes (Note 3)	Yes	Yes
Colour	Yes	No	No	Yes

Note 1 Title 1 in 32K and 56K versions
Titles 2, 3, 4 and 5 in 56K version only

Note 2 Titles 1 and 2 : DOS 3.2
Titles 3, 4 and 5 : DOS 3.2 or 3.3

Note 3 Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable.

Note 4 Title 3 not available for PET

Subject — Design Technology

Title — Computer Aided Design I

Description — This innovative package is intended to give students an introduction to computer-aided design, and to provide some insight into the importance of computers in modern industry. The user can draw on the screen any shape that is symmetrical about a single axis (e.g. a wine glass, vase, chair-leg) and then view several three dimensional representations of it. These can be rotated to give a realistic impression of the finished object and, on the basis of this, the user can modify the original shape. In addition, when the design of the object is satisfactory, a model can be 'machined' on a lathe (available separately) which is operated automatically by the computer.

Type of use — Group or individual learning.

Materials — Disk or cassette
Teacher's booklet with instructions for running the program

Source — Five Ways Software. Designer Tony Clements

Publisher — Heinemann Computers in Education

Price — £15 + VAT

Machines

Micro	RML 380Z	BBC B
Disk and/or cassette	D	D & C
Memory size	32K	32K
BASIC version	ALL	BBC BASIC
Operating system	COS 3.4 or later (Note)	OS 1.0 or later
High resolution	Yes	Yes

Note Program disk includes CP/M

Subject: Economics

Titles:
1 Circular Flow of Income
2 Equi-Marginal Utility

Descriptions: Students of economics often have difficulty in relating the simple theories studied in elementary economics courses to the complex real world. By using computers, students can actively participate in simulated 'experiments' that would be impossible with real people or businesses.

1 Circular Flow of Income - a 'moving blackboard' exercise to introduce, stage by stage the circular flow of income.

2 Equi-Marginal Utility - a game that aims to relate the topic of marginal utility to the way people act when arranging their spending.

Type of use: Group or individual learning, including a game

Materials (each title): Disk or cassette
Students' leaflets
Teacher's booklet

Source: Computers in the Curriculum Project

Price: £13.50 + VAT (each title)

Publisher: Longman Micro Software

Date: 1983

Machines

Micro	RML 380Z	APPLE II	BBC B
Disk and/ or cassette	D & C	D	D & C
Memory size	56K	48K	32K
BASIC version	BASICSG 5.OH	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	DOS 3.2	OS 1.0 or later
High resolution	Yes	Yes	Yes
Colour	Yes	No	Yes

Subject	General Studies, Economics and Chemistry
Title	Siting an Aluminium Plant
Description	An interactive, enquiry-based program using the graphics capability of the microcomputer. Enables students to consider some of the factors which must be considered when planning the siting and the production targets of an aluminium smelting plant.
Type of use	Group or individual learning
Materials	Disk or cassette Students' leaflets Teacher's booklet
Source	Computers in the Curriculum Project
Price	£13.50 + VAT
Publisher	Longmans Micro Software
Date	1983

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and/ or cassette	D & C	D & C	D	D & C
Memory size	56K	32K	48K	32K
BASIC version	BASICSG 5.OH	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	SUPERSOFT	DOS 3.2 or 3.3	OS 1.0 or later
High resolution	Yes	Yes (Note 1)	Yes	Yes
Colour	Yes	No	No	Yes

Note 1 Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable.

Subject: General Studies, Science Foundation

Title: Watts in Your Home

Description: Watts in Your Home provides a means of calculating the cost of energy-consuming devices in the home. Using the costs of the different types of fuel (such as electricity, coal, wood, gas) the total cost of a day's energy consumption can be displayed and compared with other types of energy consumption. In this way the user can compare his or her family's consumption with that of a standard household. The graphic displays showing energy consumption totals are colour coded for ease of identification and the verbal material has been kept to a minimum on each screen page. As the material is not specifically related to any one syllabus, it can be used as an interesting exercise by students at any point in their science or home economics education.

Type of use: Group or individual learning

Materials: Cassette
Teacher's handbook covering the teaching objectives, the preparation of the students, and the practical use of the package.

Source: Netherhall Software Group. Author Terry Temple-Fry

Price: £13.95 + VAT

Publisher: Cambridge University Press

Date: 1983

Machine

Micro	BBC B (Note 1)
Disk and/or cassette	C (Note 2)
Memory size	32K
BASIC version	BBC BASIC
Operating system	OS 1.0 or later
High resolution	Yes
Colour	Yes

Note 1 Version for RML 380Z to be available in 1984

Note 2 Version for disk to be available in late 1983

Subject — General Studies, Health Science, Home Economics, Science Foundation

Title — Balance Your Diet

Description — The program enables students to analyse their diet thoroughly. It is an exercise commonly carried out by biology students, but this program avoids using the excessive arithmetic otherwise necessary. The program displays the protein, carbohydrate and fat content of the foodstuffs eaten, and also mineral and vitamin content. It then totals the energy intake and the levels of the food components, and compares all of these values against a standard recommended diet. The student can also use this standard as a comparison with other diets, such as an affluent high protein diet, or that of a typical third world peasant diet.

Type of use — Group or individual learning

Materials — Cassette
Teacher's handbook covering the teaching objectives, the preparation of the students, and the practical use of the package. Also included are the necessary input codes for a wide range of foods and work sheets for follow-up activities.

Source — Netherhall Software Group. Author Dr Rod Mulvey

Price — £13.95 + VAT

Publisher — Cambridge University Press

Date — 1983

Machine

Micro	BBC B (Note 1)
Disk and/or cassette	C (Note 2)
Memory size	32K
BASIC version	BBC BASIC
Operating system	OS 1.0 or later
High resolution	Yes
Colour	Yes

Note 1 Version for RML 380Z to be available in 1984
Note 2 Version for disk to be available in late 1983

L

Subject: General Studies

Title: Point of Sale

Description: Recent developments in microelectronics have led to the introduction (as yet on a limited basis) of a new system for use in stores and supermarkets known as Electronic Point of Sale (EPOS).

This package provides a simple introduction to EPOS: included are extensive students' materials, a comprehensive lecturer's guide to setting up and using the package, and a special bar-code reader which can read both the simplified bar codes supplied with the package and the sample credit card (included in kit form). Using these resources the computer can simulate a checkout in a supermarket by reading bar codes on products, updating stock files, and accepting payment either from the till or by credit card; it provides a glimpse of the shop of the future.

Type of use: Group or individual learning, using a demonstration kit.

Materials: Disk or cassette
Special bar code reader and sample credit card
Students' booklet
Lecturer's guide to setting up and use

Source: Five Ways Software. Designer Peter R. Weston. Programmer Mark Abrams.

Price: £48 + VAT

Publisher: Heinemann Computers in Education

Date: 1983

Machine

Micro	BBC B
Disk and/or cassette	D & C
Memory size	32K
BASIC version	BBC BASIC
Operating system	OS 1.0 or later
High resolution	Yes

M

Subject	General Studies, Social Studies, Biology
Title	Population Growth
Description	The program uses animated graphics to illustrate how population change results from an imbalance between rates of birth and rates of death. It has three sections which are designed to be run by the lecturer as a demonstration in front of a group of students. Section One shows unlimited population growth where the number of organisms shown doubles with each generation. Section Two shows limited population growth where the death rate increases as the population of the colony increases. Section Three shows two graphs, one of birth and death rates and the other of total population size - by altering the birth and death rates it is possible to give a vivid demonstration of the effects of an imbalance on total population size.
Type of use	Group or individual learning
Materials	Cassette Teacher's handbook covering the teaching objectives, the preparation of the students, and the practical use of the package.
Source	Netherhall Software Group.Author Dr Rod Mulvey
Price	£13.95 + VAT
Publisher	Cambridge University Press
Date	1983
Machine	

Micro	BBC B (Note 1)
Disk and/or cassette	C (Note 2)
Memory size	32K
BASIC version	BBC BASIC
Operating system	OS 1.0 or later
High resolution	Yes
Colour	Yes

Note 1 Version for RML 380Z to be available in 1984
Note 2 Version for disk to be available in late 1983

N

Subject	Geography
Titles	1 Water on the Land 2 Prospecting Game 3 Urban Growth Simulation 4 Urban Welfare
Descriptions	There are areas of geography where an appreciation of decision making in the real world is taught through games. The role-playing simulations in these packs use the computer to keep tabs on the scoring mechanism used in such games, thus releasing more time for the student to actively participate in decision making. Such a facility is particularly useful for the less able student who may otherwise not be able to cope with its mechanisms. The student's handling of bulky material from which geographical interpretations will be made is enhanced by the computer's accuracy and speed. The programs have been specifically written to relate to the Schools Council Geography 16 - 19 Project. 1 Water on the Land - an exercise simulating the flows and stores of water on an area of land after rainfall 2 Prospecting Game - a chance to act as prospecting companies exploring and mining in an underdeveloped area with mineral potential 3 Urban Growth Simulation - an exercise that allows the student to predict retrospectively the spatial growth of a market town, and its likely spatial features 4 Urban Welfare - provides the 1981 Census data and enables students to analyse the criteria and effectiveness of establishing criteria for urban deprivation.
Type of use	Group or individual learning, including simulation and games
Materials (each title)	Disk or cassette Students' leaflets Teacher's booklet

N

Source	Computers in the Curriculum Project
Price	£13.50 + VAT (each title)
Publisher	Longman Micro Software
Date	1983

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and/ or cassette	D & C	D & C	D	D & C
Memory size	56K	32K	48K	32K
BASIC version	BASICSG 5.0 H	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	SUPERSOFT	DOS 3.2	OS 1.0 or later
High resolution	Yes	Yes (Note)	Yes	Yes
Colour	Yes	No	No	Yes

Note Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable.

Subject	Mathematics (elementary)
Title	Micros in the Mathematics Classroom
Description	A varied collection of 14 teaching units, enabling the lecturer to explore the possibilities and potential role of the micro-computer in mathematics teaching ASPIR investigates polygons AUTOFRAC provides a display of equivalent fractions BARSET handles sets of pictograms of 5 objects COUNTERS is a game for 2 players to develop strategic thinking and knowledge of number bonds CWORDS is about number names DICECOIN investigates probability DIRECTED uses the movement of a robot to teach addition, subtraction and directed numbers ERGO requires students to discover the pattern and fill in the numbers EUREKA is designed to teach elementary graph interpretation FGP plots cartesian graphs of functions PIRATES is a treasure hunt SNOOK encourages students to form hypotheses and test them SUBGAME is a competition between user and computer to allocate digits to a sub-traction sum TABCAR provides practice in multiplication tables
Type of use	Exploration, demonstration and practice
Materials	Disk or cassette Book, 83pp
Source	Shell Centre for Mathematical Education and ITMA (Investigation on Teaching with Micro-computers as an Aid)
Price	£25.00 + VAT (pack of 14 units)
Publisher	Longman Micro Software
Date	1982

Machines

Micro	RML 380Z	RML 480Z	BBC B
Disk and/ or cassette	D	C	D
Memory size	32K	64K	32K
BASIC version	BASICSG 5.OA, H or L	BASIC IN ROM	BBC BASIC
Operating system	CP/ M 1.4 or 2.2	ROS	OS 1.0 or later
High resolution	Yes	Yes	Yes
Colour	No	No	No

P

Subject: Physics

Title: Transverse Waves II

Description: The program allows a flexible exploration of the properties of transverse waves. Up to three waves (first, second or reflected, and the sum of waves) may be displayed dynamically in high-resolution graphics. Their parameters (frequency, velocity, and phase difference) can be varied as the waves are displayed to illustrate a variety of wave effects. Some special features are:

* an invididual particle may be highlighted and its associated circular motion displayed;
* waves may be superimposed as they are moving;
* up to fourteen successive waves may be added or subtracted and the resultant wave displayed.

Type of use: Classroom demonstration or individual learning.

Materials: Disk
Teacher's booklet with instructions for running the program

Source: Five Ways Software. Designer Tony Clements. Programmer Anne Price.

Price: £15 + VAT

Publisher: Heinemann Computers in Education

Date: 1983

Machine

Micro	RML 380Z
Disk and/or cassette	D
Memory size	32K
BASIC version	ALL
Operating System	COS 3.4 or later (Note)
High resolution	Yes

Note Program disk includes CP/M

Q

Subject	Physics
Title	Moving Molecules
Description	The program makes a skilful use of graphics that shows simple kinetic theory to explain Charles' and Boyle's law - and helps students visualise what is happening to the molecules in gases, liquids and solids as temperature and pressure are changed. There are four sections to the program: the first illustrates phase changes; the second illustrates diffusion of gases and liquids; the third shows variation of pressure with temperature, and the fourth shows how pressure varies with changes in volume. All the different variables can be altered to allow full exploration of the PV=RT relationship.
Type of use	Group or individual learning, involving simulation
Materials	Cassette Teacher's handbook covering the teaching objectives, the preparation of the students, and the practical use of the package.
Source	Netherhall Software Group. Author Terry Temple-Fry
Price	£13.95 + VAT
Publisher	Cambridge University Press
Date	1983

Machine

Micro	BBC B (Note 1)
Disk and/or cassette	C (Note 2)
Memory size	32K
BASIC version	BBC BASIC
Operating system	OS 1.0 or later
High resolution	Yes
Colour	Yes

Note 1 Version for RML 380z to be available in 1984
Note 2 Version for disk to be available in late 1983

R

Subject	Physics
Titles	1 Electrical Impedance 2 Acoustics 3 Collisions 4 Demonstrations
Descriptions	The programs provide an opportunity for the student to explore a situation that is not safe, too dangerous, too time-consuming or too time-consuming or too complicated for work in the classroom. At the same time the interactive nature of the design encourages the student to be involved with enquiry-based learning. It enables the student to push back the frontiers of learning often restricted by the limited scope that a book can provide (in the form of pre-determined text and diagrams). The student can achieve unlimited displays of diagrams, graphs, tables and text as a result of his/her input into the program. Electrical impedance Charts the frequency response of circuits containing resistors, capacitors and inductors which are easily defined by the user. Acoustics Calculates reverberation time of a room for different sound frequencies. The design of the room and materials used in its construction can be varied. Collisions A simulation of the physical processes occurring during a collision between two objects. Both elastic and inelastic collisions may be investigated. Momentum This program is an animated simulation of a before and after study of a collision between two objects. Demonstrations Series of 4 short programs for demonstrations dealing with radioactive decay, alpha particle scattering, projectile motion and Fraunhofer diffraction.
Type of use	Group or individual use, including simulations

Materials (each title)	Disk or cassette Students' leaflets Teacher's booklet
Source	Computers in the Curriculum Project (second series)
Price	£13.50 + VAT (each title)
Publishers	Longman Micro Software
Date	1983

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and / or cassette	D & C	D & C	D	D & C
Memory size	56K	32K	48K	32K
BASIC version	BASICSG 5.OH	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	SUPERSOFT	DOS 3.2 or 3.3	OS 1.0 or later
High resolution	Yes	Yes (Note)	Yes	Yes
Colour	Yes	No	No	Yes

Note Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable.

S

Subject	Physics
Titles	1 Lenses 2 Longitudinal Waves 3 Transverse Waves
Descriptions	1 Lenses The program simulates rays of light from a ray box or laser incident on a lens or mirror and may thus be used to supplement the teaching of optics. The optical units available are convex and concave lenses, and convex, concave, and plane mirrors. The rays, which originate from the tip of an object, may be scanned up and down to clarify the idea of image formation. When the position of the object is changed by the user the ray display will change dynamically, and so emphasize the basic properties of the optical units. Graphs can be drawn on the screen which show the relationship between various factors, for example magnification and the distance of the image from the optical centre. The program is intended mainly to demonstrate concepts such as centre of curvature, principal focus, and focal length. 2 Longitudinal Waves The program provides a dynamic model of longitudinal wave motion. The user can control important variables - velocity, amplitude, wavelength, etc. The properties of interference, reflection, and beats can thus be investigated, step by step. 3 Transverse Waves The program provides a dynamic model of transverse wave motion. The user can control important variables - velocity, amplitude, wavelength, etc. The properties of interference, reflection, and beats can thus be investigated, step by step.
Type of use	Classroom demonstration or individual learning, using simulation
Materials (each title)	Disk or cassette Teacher's booklet with instructions for running the program
Source	Five Ways Software. Designer John Tesh.
Price	£12.50 + VAT (each title)
Publisher	Heinemann Computers in Education
Date	1982

Machines

Micro	RML 380Z	Apple II	BBC B
Disk and/or cassette	D	D	D & C (Note 2)
Memory size	32K	48K	32K
BASIC version	ALL	APPLESOFT	BBC BASIC
Operating system	COS 3.4 or later (Note 1)	DOS 3.2 or 3.3	OS 1.0 or later
High resolution	No	No	Yes

Note 1 Program disk includes CP/M
Note 2 Title 1 not available on BBC Micro

T

Subject: Physics

Titles:

1 Photoelectric Effect
2 Mass Spectrometer
3 Gravitational Fields
4 Planetary Motion
5 Capacitor Discharge
6 Gaseous Diffusion
7 Radioactive Decay

Descriptions:

The programs provide an opportunity for the student to explore a situation that is not safe, too dangerous, too time-consuming or too complicated for work in the classroom. At the same time the interactive nature of the design encourages the student to be involved with enquiry-based learning. It enables the student to push back the frontiers of learning often restricted by the limited scope that a book can provide (in the form of pre-determined text and diagrams). The student can achieve unlimited displays of diagrams, graphs, tables and text as a result of his / her input into the program.

1 Photoelectric effect
Laboratory experiments and a simulation of the photoelectric effect followed by a simulation of Millikan's apparatus

2 Mass spectrometer
A simulation of a mass spectrometer allowing eventual identification of ions in an 'unknown sample'. Other investigations from a range of supplied samples may be tried. Further samples can be added to the simulation

3 Gravitational fields
An investigation of simple gravitational motion and the idea of escape velocity, for students at GCE O level standard

4 Planetary motion
An analysis of real and generated orbit data leading to laws of planetary motion. Suitable for students who are learning about direct proportionality. The unit also covers simple Newtonian gravitation applied to orbit theory for more advanced students

5 Capacitor discharge
Laboratory experiments and a computation of simple capacitor circuits

6 Gaseous diffusion
An extended study of a simple model of gaseous diffusion progressing from shuffling counters at random to an understanding of the statistics of moving up to one million particles at random between two halves of a box

7 Radioactive decay
Laboratory investigations and models of simple and series radioactive decay phenomena.

Type of use: Group or individual learning, including simulations

Materials (each title): Disk or cassette
Students' leaflets
Teacher's booklet

Source: Computers in the Curriculum Project (first series)

Price: £13.50 + VAT (each title)

Publisher: Longman Micro Software

Date: 1983 (second edition)

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and/ or cassette	D & C	D & C	D	D & C
Memory size	(Note 1)	32K	48K	32K
BASIC version	BASICSG 5.0H	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	SUPERSOFT	DOS 3.2 or 3.3	OS 1.0 or later
High resolution	Yes	Yes (Note 2)	Yes	Yes
Colour	Yes	No	No	Yes

Note 1 Titles 2, 3 and 4 in 32K and 56K versions.
Titles 1, 5 and 6 in 56K version only

Note 2 Supersoft High Resolution Graphics add-on board required. Other high resolution boards not suitable.

U

Subject	Physics
Title	Physics Pack 2
Description	Most of the programs are designed for students at GCE A level, but some are also suitable for students at O level. They make maximum use of graphics facilities. Alphafoil.Simulates the random scattering of alpha particles in Geiger and Marsden's experiments. The experimenter records the number of particles deflected by a given angle. The main parameters, foil material, foil thickness and alpha particle velocity can all be altered individually. Nuclei.Simulates the random decay of up to 200 radioactive nuclei. The decay process can be shown graphically, or in the form of bar charts. This program has proved to be particularly useful in getting across the randomness of the process to students studying nuclear decay for the first time. Quantum shuffle. Intended to be used as part of an elementary statistical approach to thermodynamics, based on Einstein's simple model of a solid. Models heat flow, entropy, etc. in an Einstein solid by the random shuffling of quanta. Random walk. Simulates the random walk in two dimensions and is particularly useful when discussing the diffusion process. Ampere. Calculates the magnetic flux density produced by a straight wire. The worksheets include exercises on the flux density of an infinitely long wire, investigations on the accuracy of the numerical method and the calculation of the flux density produced by a magnetic dipole. The numerical integration method used enables students to make the important theoretical link between the definition of the ampere and the Biot-Savart law even if they lack a full understanding of calculus. Millikan. Designed to save time when performing Millikan's experiment in the laboratory. It is not a simulation, but a calculating aid to be used in conjunction with the experiment.
Type of use	Group or individual learning, including simulations and modelling

Materials	Disk or cassette Students' booklet containing worksheets and background theory. Teacher's guide suggesting methods of use Technical guide containing information on program design and structure, of value to those wishing to modify the programs.
Source	Warwick Science Simulations. Programs and text: Richard Beare
Price	£20 + VAT (pack of 6 units)
Publisher	Longman Micro Software
Date	1983

Machines

Micro	RML 380Z	PET	APPLE II	BBC B
Disk and / or cassette	D & C	D & C	D	D & C
Memory size	32K	32K	48K	32K
BASIC version	BASICSG 2	PET BASIC	APPLE SOFT	BBC BASIC
Operating system	CP/ M 1.4	-	DOS 3.2 or 3.3	OS 1.0 or later
High resolution	Yes	No	Yes	Yes
Colour	Yes	No	No	Yes

10. List of publishers mentioned in the Directory:-

Publishers

Cambridge University Press
Edinburgh Building
Shaftesbury Road
Cambridge CB2 2RU.

Tel: 0223 312393

Heinemann Computers in Education
22 Bedford Square
LONDON WC1B 3HH

Tel: 01 637 3311

Longman Micro Software

(i) Orders

Longman Group Resources Unit
33-35 Tanner Row
York YO1 1JP

Tel: 0904 20801

(ii) Enquiries

Burnt Mill
Harlow
Essex

Tel: 0279 26721

Section III MEP Regional Information Centres

11. National In-service Training Coordinators

Electronics and control technology
Graham Bevis
Ronsella
Lordswood
Highbridge
Eastleigh
Hants SO5 7HR
Answer phone service: 0703 617627

Communications technology
Peter Wheeler (Word processing)
PETRAS
Ellison Place
Newcastle Polytechnic
Newcastle upon Tyne
NE1 8ST
Tel: 0632 612813

The Computer
Phillip Russell
50 Tanygraig Road
Bynea
Llanelli
Dyfed SA14 9LH

Answer phone service: 05542 59246

Ann Irving (information retrieval)
Department of Library and
Information Studies
University of Technology
Loughborough
LE11 3TU

Tel: 0509 890050

Computer based learning
Mike Aston
8 Causeway Close
Potters Bar
Herts EN6 5HW

Answer phone service: 0707 58644
Telex: 262413

Special Education
Mary Hope
Council for Education Technology
3 Devonshire Street
LONDON W1N 2BA

Tel: 01 580 7553/01 636 4186 x 50

12. MEP Centres (as at September 1983)

The North
Resources Centre, Newcastle Poly
Coach Lane Campus,
Newcastle upon Tyne NE7 7XA

0632 700424
Dir:R Edwardson

South West
Bristol Poly, Coldharbour Lane
Frenchay, Bristol BS16 1QY

0272 656261
Dir: R Margetts

W & N Yorkshire
Queen[illegible]od House, Leeds Poly
Becket[illegible] Park Site
Leeds, LS6 3QS

0532 783437
Dir: R Leigh

Capital
ILEA Educ. Computer Centre
Bethwin Road
LONDON SE5 OPQ

01 735 9123 x 216
Dir: M Doran

S Yorks & Humberside
Educational Development Centre
Chequer Road
Doncaster

0302 68935 x53
Dir: Dr P Avis

E Midlands
Towers Library, Loughborough Univ.
of Technology,
Loughborough
Leics
LE11 3TU

0509 37398
Dir: Dr M Bramer

Eastern
Chelmer Institute of HE
Victoria Road South,
Chelmsford
Essex

0245 356940
Dir: D Want

Chiltern
Chiltern Regional Centre
AUCBE, Endymion Road, Hatfield
Herts AL10 8AU

070 72 66121
Dir: Dr B Tagg

Wales
WJEC, 245 Western Ave,
Cardiff CF5 2YX

0222 561231
Dir: D Rees

W Midlands
MACE
Four Dwellings School
Dwellings Lane
Quinton
Birmingham B32 1RJ

021 421 6361
Dir: R Conibear

Merseyside with Cheshire
Regional Information Centre
Rodney House, 70 Mount Pleasant
Liverpool L3 5UX

051 708 6620 x27
Dir: Mrs S Evans

G. Manchester & Lancs
Manchester Polytechnic
Didsbury School of Education
799 Wilmslow Road
Manchester M20 8RR

061 445 0780
Dir: R Chantry-Price

Southern Counties
Southern Region Microelectronics
Information Centre
Furnace Drive
Furnace Green
Crawley RH10 6JB

0293 546216
Director: P Neate

N.Ireland
MICRONET Centre
South Building
New University of Ulster
Coleraine
N Ireland

0265 4141 x341
Director:H McMahon

13. FEU Regional Curriculum Bases

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YHAFHE RCB
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0532 440751

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Cornwall TR15 3RD
0326 72482

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Luton LU2 8LE
0582 34111 x 734

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Wolverhampton Polytechnic
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Dudley DY1 3HR
Dudley 59741

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New College
Nevilles Cross Centre
Durham DH1 4SY

Durham 47325

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WJEC RCB
Arlbeg Houseoad
Greyfriars Road
Cardiff
CF1 3AE

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Coordinator
L&HC RCB
Garnett College
Downshire House
Roehampton Lane
London SW15 4HR

Felicity Munday
Coordinator
EMFEC RCB
Robins Wood House
Robins Wood House
Aspley
Nottingham NG8 3NH

FEU Publications

Microcomputer materials from MEP is one of a number of FEU publications intended to inform teachers and others and to stimulate professional discussion about matters of concern of the FE service.

Other FEU publications in the microelectronics field include:

Computer Aided Design in FE: some suggestions on the inclusion of CAD topics in Mechanical Engineering courses. November 1982. (Order No. 9826)

This document, by Peter Ingham of the City of Birmingham Polytechnic, is intended to give guidance to those concerned with the introduction of Computer Aided Design (CAD) into technical curricula. Whilst specially related to mechanical engineering, it should also prove useful to those in other disciplines. The author considers as inevitable the widespread adoption of CAD by British Industry. Further education will, therefore, have an obvious role to play in CAD development, if it is to remain a significant contributor to technological updating.

Towards the electronic office: an overview of the curricular implications of new technology for office and business education and training. September 1983. (Order No. 163)

Commissioned by the FEU from Christine Disney, Computer Consultant, this publication reviews the curriculum implications of new office technology as they have appeared recently. The early sections of the document describe a growing awareness and use of information technology by industry and commerce. The latter sections describe the ways in which the training and education systems are reacting to a rapidly changing situation.

Computer aided profiling: a case study at the North Warwickshire College of Technology and Art. September 1983. (Order No. 164)

A description of how North Warwickshire College approached the computerisation of student profiles for a full-time vocational preparation course. The report outlines the background against which the computerisation idea evolved, the design of the profile, its computerisation, the means by which the idea has begun to be further disseminated throughout the college, the implementation of the profile on one course and the lessons which have been learned as a result. Appendix 1 of the document presents the computer specification.

Computer literacy Part I: a manager's guide. November 1983 (Order No. 238)

Part I of this report is intended primarily for providers of computer literacy, i.e. for those engaged in the management function (College Principals, Vice Principals, Heads of Department, Mangers of YTS schemes, Directors of TVEI schemes). The document contains an overview of computer literacy in the context of education and training schemes and gives content, resource and staff development recommendations, together with strategies for assessment.

Copies of these documents (which are free of charge) are obtainable, while stocks last from the Publication Despatch Centre, Department of Education and Science, Honeypot Lane, Canons Park, Stanmore Middlesex HA7 1AZ.

A complete list of FEU publications is also available from the above address.

The FEU has a number of Research projects (RPs) ongoing in the microelectronic field.

RP 59 Review of Microelectronics in FE.
RP 65 Robotics – a curriculum module for technicians.
RP 80 Computer assisted numeracy profiling.
RP 86 A computerised profiling scheme of numeracy, communications and media studies.
RP 94 Computer appreciation for all full-time and part-time day students.
RP 104 Introduction of computer studies and "hands-on" experience into lower level courses.
RP 106 Word processing curriculum review.
RP 108 Microcomputer use for FE students.
RP 110 A computer based curricular provision for rural communities.
RP 118 Computer literacy for UK shipping management.
RP 119 The implications on FE curricular of the introduction of the robot.
RP 120 Identification of training requirements in computer-aided engineering for smaller firms.

Details of these Projects are available from FEU, Room 7/48, Elizabeth House, York Road, London SE1 7PH.